

THE IDENTITY AND STATUS OF *CAMBALA WASHINGTONENSIS* CAUSEY (DIPLOPODA: SPIROSTREPTIDA: CAMBALIDAE)¹

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ABSTRACT: The recent examination of a mature male, near topotype of *Cambala washingtonensis* Causey from Whitman County, Washington, resolves the long standing problems of the status and identity of this nominal species. It is definitely referable to *Cambala* and is sufficiently distinct from the six known species in the eastern and central United States to be accorded full specific rank. The posterior gonopod of *washingtonensis* is closest in form to that of *C. speobia* (Chamberlin), of Texas and adjacent states. However, the two species are distinguished by size of telopodite, apical configuration of the anterior coxal lobe, and relative lengths of the anterior and posterior coxal lobes. Forms of *speobia* in southern Colorado differ from those in Texas in having a reduced telopodite and more nearly equal anterior and posterior coxal lobes, suggesting a geographical trend toward *washingtonensis* character states in a northwesterly direction. A third locality for *washingtonensis* is confirmed in southwestern Oregon.

The identity of *Cambala washingtonensis* has been unknown since 1954, when Causey described the milliped from a female specimen. The type locality is Wilma, Whitman County, Washington (erroneously reported by Causey as being in Garfield County). Although the holotype is a female and the male gonopods have never been illustrated or described, puzzling statements about the identity of *washingtonensis* have appeared in the literature. For example, Causey (1964) diagnosed *C. reddelli*, now considered a synonym of *C. speobia* (Chamberlin), as being "a polytypic species near *C. washingtonensis* in the form of the gonopods," and later in this paper reiterated that there was very little difference between the gonopods of the two species. Since the configuration of the posterior gonopods of males is the only reliable character for specific identifications (Shelley 1979), the basis for these early statements is obscure. In the same paper, Causey reported the genus from western Washington and northern Idaho. Since no Idaho localities have ever been recorded for any species of *Cambala*, however, one must assume that this citation was based on the presence of *washingtonensis* in a neighboring part of Washington.

In 1979 I summarized the confusion surrounding *washingtonensis* and decided that, although its identity was unknown, it was probably referable to *Cambala*. Chamberlin and Hoffman (1958) had earlier suggested that *washingtonensis* might not be congeneric with the eastern species of

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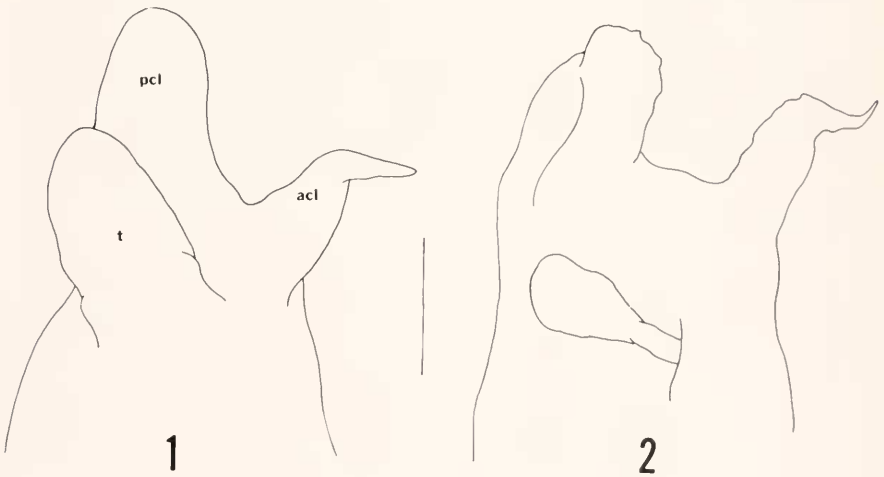
Cambala, but gave no reason for this supposition. My conclusion was based on a small sample of crested male cambaloids from Drain, Douglas County, Oregon, whose external ornamentation was very similar to that of such eastern species as *C. minor* Bollman and *C. ochra* Chamberlin, and whose posterior gonopods were similar in configuration to those of *speobia*. This material, from southwestern Oregon, suggested that *washingtonensis*, in southeastern Washington, might be a species of *Cambala* and that it might even be a synonym of *speobia*. However, since no specimens were available from southeastern Washington, the only recourse was to retain *washingtonensis* as a valid species of *Cambala* until topotypical or near topotypical males could be collected. At that time the type of *washingtonensis* was absent from its published repository, the American Museum of Natural History (AMNH), and no material identified as *washingtonensis* was available in the Causey material donated in 1976 to the Florida State Collection of Arthropods (FSCA).

Dr. Causey died in October 1979, and the remainder of her collection, which she had retained, has been transferred to the FSCA. I recently sorted this additional material and discovered both the holotype of *washingtonensis* and a male specimen from Albion, Whitman County, Washington, labeled "Male Homeotype, fide Causey 1964." The latter millipede was undissected, and the gonopods were recessed within the 7th segment, their normal position. Hence, this male could not have supported her published comments of 1964 about the similarities between the gonopods of *washingtonensis* and *reddelli*, and the basis for these remarks remains a mystery. Since it was identified by Causey, the author of the species, this individual is a metatype rather than a homeotype. Its collection from Albion, 46 km (37 mi) N Wilma, is close enough to the type locality to satisfy the near topotypical requirement, considering how little sampling has been done in this region. Consequently, the identity and status of *washingtonensis* can now be resolved, some 26 years after the species' description.

Figures 1 and 2 illustrate lateral views of the left posterior gonopods of a male of *speobia* from Texas, and the metatype of *washingtonensis*, respectively. As can be seen, the telopodite (t) of *washingtonensis* is much smaller than that of *speobia* and the length of the anterior coxal lobe (acl) of *washingtonensis* is subequal to that of the posterior coxal lobe (pcl), whereas in *speobia* the acl is shorter. Furthermore, the acl of *washingtonensis* is apically curved and directed submediad, whereas that of *speobia* is straight and points more anteriorly. These illustrations leave no doubt that *washingtonensis* is indeed referable to *Cambala*, and it also is sufficiently different from *speobia* to warrant full specific rank. The males from Drain, Oregon, agree closely with the metatype, and this site can now be confirmed as the third known locality for the species. The range of

washingtonensis therefore extends from southwestern Oregon to southeastern Washington; its occurrence in Idaho awaits verification.

Despite the aforementioned differences between *washingtonensis* and *speobia*, they could be geographic races of a single species with a wide distribution in the central and western United States. A sample of *speobia* from Huerfano County, Colorado, differs from that illustrated in figure 1 in having a reduced telopodite and more nearly equivalent coxal lobes, suggesting a geographical trend toward *washingtonensis* character states in a northwesterly direction. More material must be collected from intervening locations between Washington and Texas, however, before such a determination can be made. The central Rocky Mountains in particular should be thoroughly investigated to ascertain the distribution and identity of its cambaloid forms. A sample containing only females in the North Carolina State Museum (NCSM) collection from Custer County, Colorado, adjacent to Huerfano County, suggests that *Cambala* may be common in the southern mountains of that state. Complete data citations for known localities of *washingtonensis* and the new Colorado ones for *speobia* are listed below.



Figs. 1-2. 1, left posterior gonopod of *Cambala speobia* from Sonora, Sutton Co., TX, lateral view. 2, left posterior gonopod of metatype male of *C. washingtonensis*, lateral view. Setation omitted from both figures. acl, anterior coxal lobe; pcl, posterior coxal lobe; t, telopodite. Scale line = 0.1 mm.

Cambala washingtonensis Causey

WASHINGTON: *Whitman Co.*, Wilma, F. 22 April 1935, M. H. Hatch (AMNH)³
TYPE LOCALITY; and Albion, M. 11 October 1950, D. Johnson (FSCA).
OREGON: *Douglas Co.*, Drain, 2M. 4 March 1967, V. Roth (AMNH).

Cambala speobia (Chamberlin)

COLORADO: *Huerfano Co.*, 38.4 km (24 mi) W Walsenburg, several MM and FF, 22 August 1959, C. C. Hoff (AMNH). *Custer Co.*, South Hardscrabble Creek, 6.2 km (3.9 mi) E CO hwy. 165, 2F, 24 May 1979, S. K. Wu (NCSM A3069).

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³The holotype of *washingtonensis* and those of other species in the Causey collection whose published repository is the AMNH will be transferred there from the FSCA as soon as feasible.